

*Presentation to the Washington Department of Ecology
ASR Rulemaking Technical Advisory Group
City of Yakima ASR Pilot Test Preview*





A Good ASR Project has A Number of Things Going for it.

- ❖ Suitable Hydrogeologic System (water balance, timing of impacts, availability of source water)
- ❖ Infrastructure (transmission; economically feasible)
- ❖ Water quality (SWDA, treatment, non-reactive)
- ❖ Clear regulatory process
 - permitting
 - water rights
 - water quality
 - SDWA
 - environmental credit



Outline

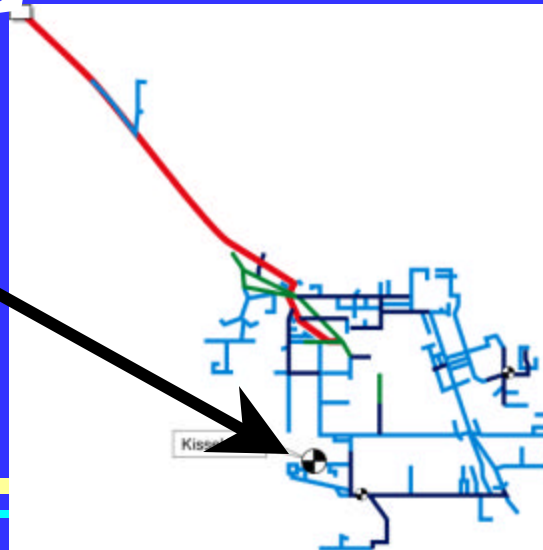
Yakima Case Study

- ❖ Purpose
- ❖ Hydrogeology
- ❖ Water Quality
- ❖ Infrastructure
- ❖ Conclusions

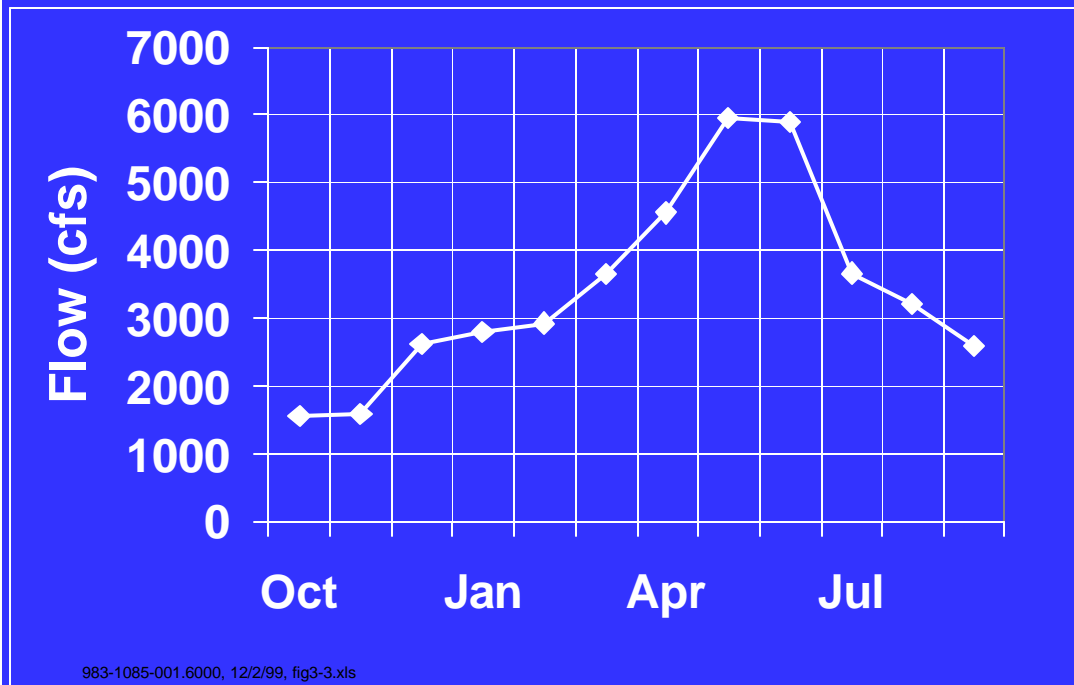
Purpose of ASR for the City of Yakima



- ❖ Surface Water is the Principal Source
- ❖ Single Principal Source is Subject to Interruption
- ❖ ASR to Improve Reliability of Existing System
- ❖ Conjunctive Use of Surface & Groundwater



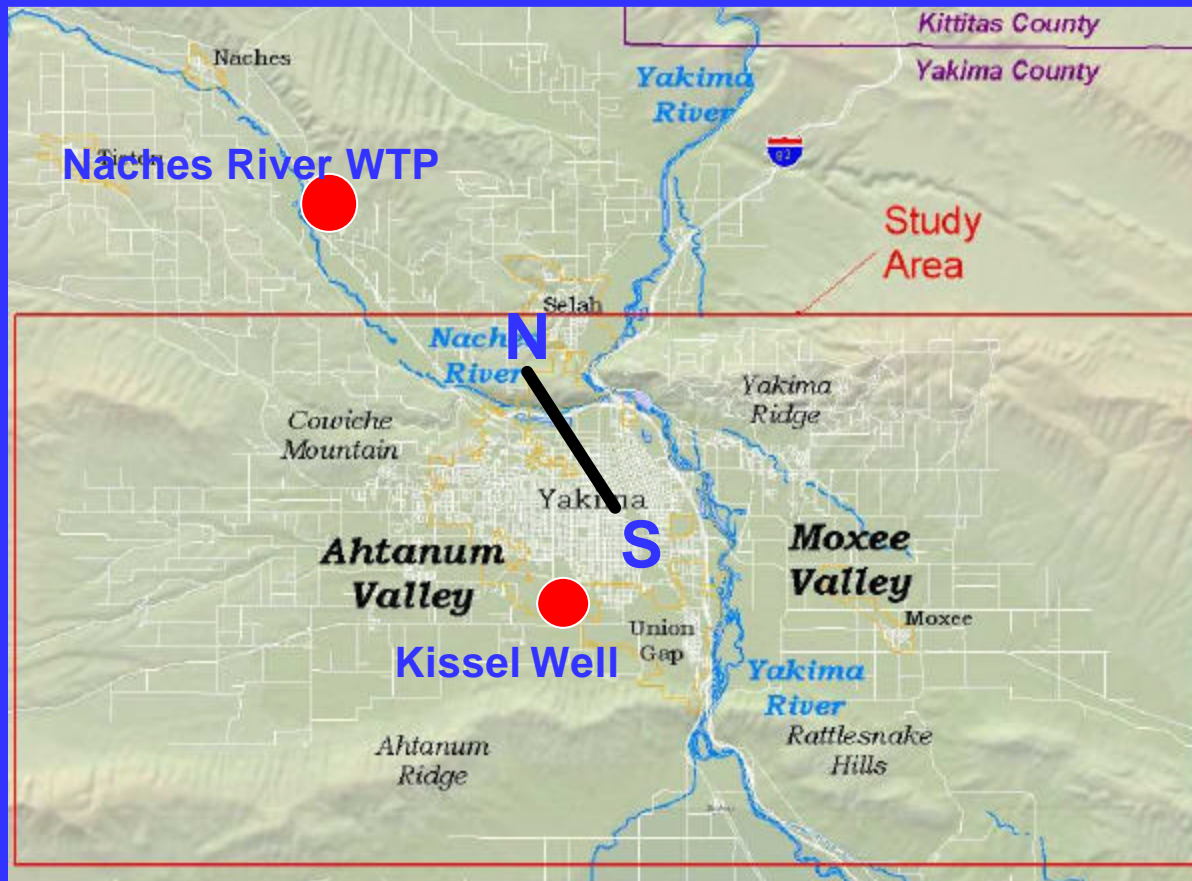
Proposed Program



Naches River Hydrograph

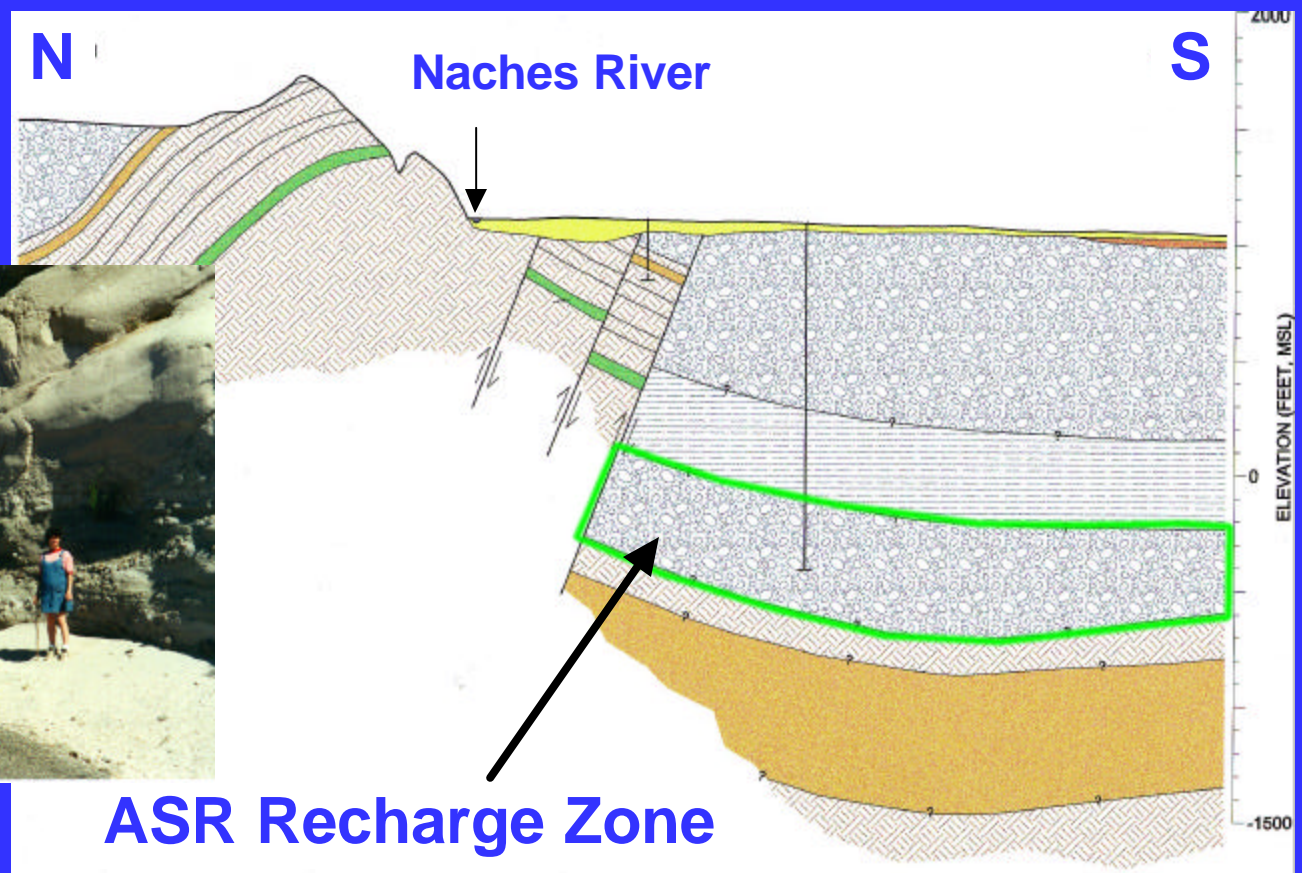
- ❖ Source is Naches River
- ❖ Recharge during winter
- ❖ Recharge to Ellensburg Fm.
- ❖ Recovery during times of need
- ❖ Proposed program will have Environmental Benefits

Geology



- ❖ Structurally closed basin
- ❖ Basalt Ridges
- ❖ Ellensburg Fm. Basin Fill

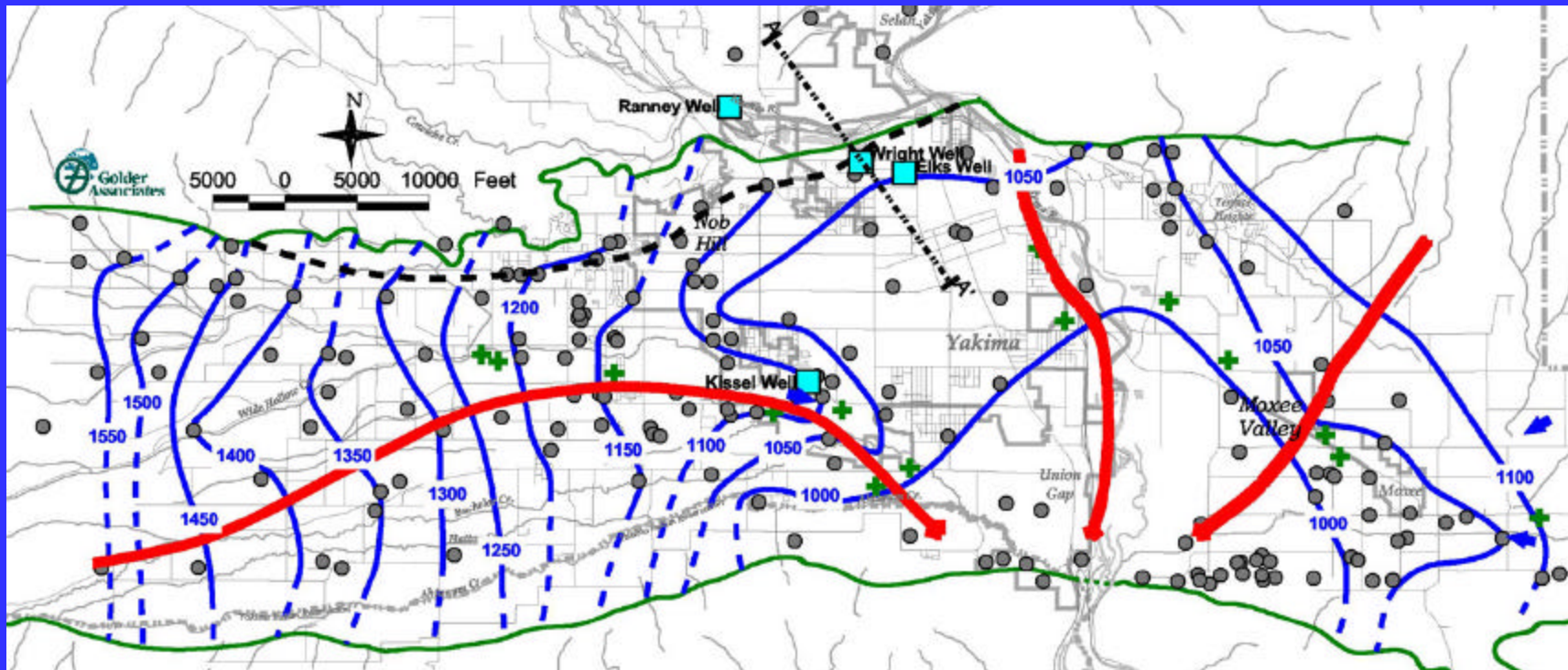
Geology



- ❖ Recharge into Ellensburg Fm. (sandstone)
- ❖ Strong stratification (confined)
- ❖ Available Storage (water levels have dropped 30'/30 yrs)

Hydrogeology

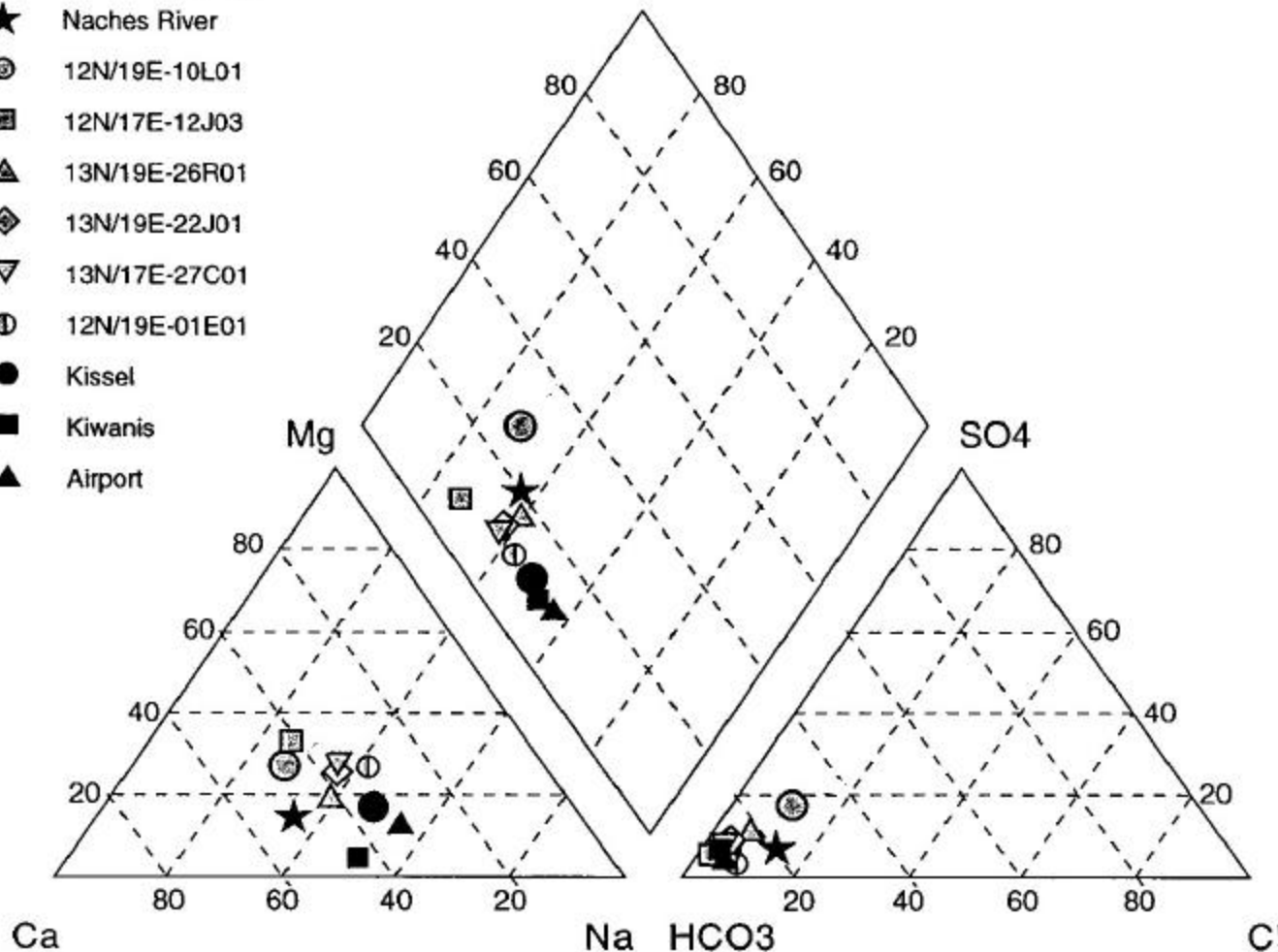
- ❖ No pre-existing water level base maps
- ❖ This data is needed for storage evaluation and was developed for this project
- ❖ No evidence for significant interbasin flow at scale of Upper Ellensburg Fm.



Water Quality: Major Chemistry

LEGEND

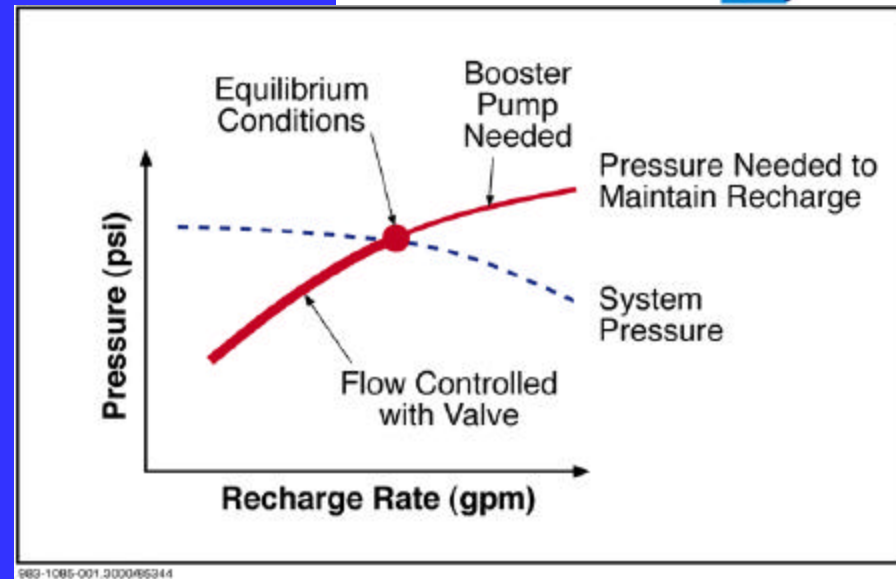
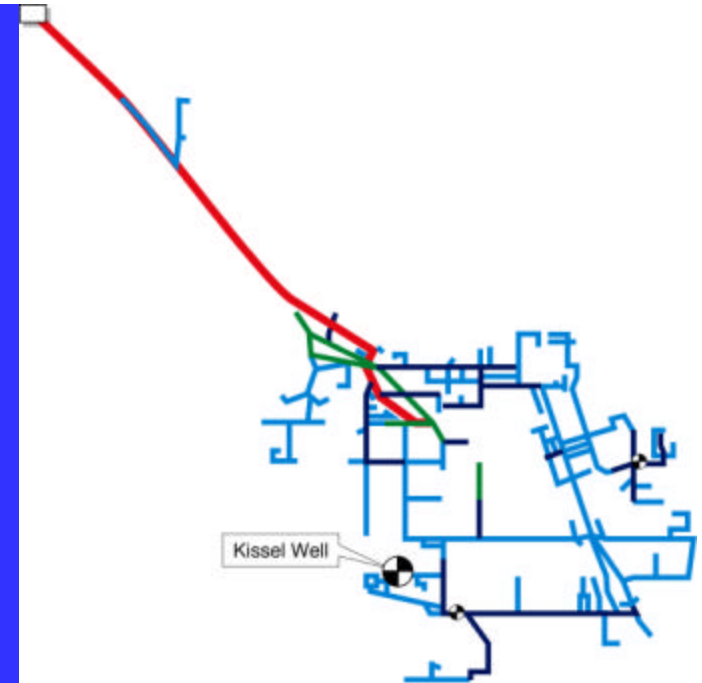
- ★ Naches River
- ⊙ 12N/19E-10L01
- ⊠ 12N/17E-12J03
- ▲ 13N/19E-26R01
- ◆ 13N/19E-22J01
- ▼ 13N/17E-27C01
- ① 12N/19E-01E01
- Kissel
- Kiwanis
- ▲ Airport



- ❖ Surface/Ground Water Similar
- ❖ High resolution data needed
- ❖ No reactions predicted

Infrastructure

- ❖ Hydraulic analysis of distribution system was conducted
- ❖ Adequate pressures available during winter for recharge and fire flows
- ❖ Existing well was retrofit
 - meters (digital & mechanical)
 - valves (ball & PRV)



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Pre-Pilot Test Findings: All conditions are favorable

- ❖ Recharge water is available in the winter
- ❖ Closed hydrogeologic basin to contain recharged water
- ❖ There is available aquifer storage capacity
- ❖ Good water quality (non-reactive)
- ❖ Existing infrastructure is well-suited for ASR operations (transmission; economically feasible)
- ❖ Next Step: Pilot Test